

Lunar Laser Ranging James E. Faller JILA (NIST and the University of Colorado) Email: fallerj@jila.colorado.edu

Lunar laser ranging began following the placement of a retro-reflector array on the lunar surface by the Apollo 11 and subsequently by the Apollo 14 and 15 astronauts. This transformed our moon into an extremely useful satellite for earth-moon science, and created “the near-complete relativistic gravity experiment” (K. Nordtvedt). This triumph of the Apollo Program was called during that time “NASA’s most cost effective experiment” (I. Shapiro). I will talk briefly about the early ideas for using satellites to test gravitational theories, the origin of the idea for lunar laser ranging, the concerns that drove the design of the three Apollo retro-reflector arrays, and the events that led up to and resulted in the first detection of retro-reflected laser pulses from the Apollo 11 array. Finally, I will say a few words about how this still-ongoing experiment has evolved and where, now 45 years later, it stands today.